REMARKS

Applicants note with appreciation the Examiner's indication of allowable subject matter, specifically the subject matter recited in Claims 3-5, 11-13, and 19-21. Now in the application are Claims 1-5, 9-13 and 17-21 of which Claims 1, 9 and 17 are independent. Claims 6-8, 14-16 and 22-24 have been withdrawn from consideration without prejudice to Applicants pursuit of these claims in one or more divisional or continuation applications. The forgoing amendment amends Claims 17-21. No new matter is added and no new issues are raised. Therefore no new search is required. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Claim Amendments

Claims 17-21 are amended to address matters concerning claim form. More specifically, Claims 17-21 are amended to reflect the claimed computer program is embodied on a computer readable medium.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 2, 9, 10, 17 and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,636 of Kohno, *et al.* (hereinafter "Kohno"). Applicants respectfully traverse each of these rejections and contend that Kohno does not anticipate Claims 1, 2, 9, 10, 17 and 18.

Applicants' invention provides a control system for an internal combustion engine having a plurality of cylinders and a switching means for switching between an all-cylinder operation in which all of the plurality of cylinders are operated and a partial-cylinder operation in which at least one of the plurality of cylinders is halted. The control system includes an operating parameter detecting means, a condition determining means, a modifying means and an instructing means. The operating parameter detecting means detects operating parameters of a vehicle driven by the engine. The operating parameters include at least one operating parameter of the engine. Examples of operating parameters detected by the operating parameter detecting means include, but is not limited to TH, TW, TA, NE, VP.

The condition determining means determines a condition for performing the partial-cylinder operation, based on the operating parameters detected by the operating parameter detecting means. The modifying means modifies a result of the determination by the condition determining means so that the partial-cylinder

operation may be continued, when the detected operating parameters satisfy a predetermined continuation condition within a predetermined time period from the time a vehicle operating state where the condition for performing the partial-cylinder operation is satisfied, has changed to another vehicle operating state where the condition for performing the partial-cylinder operation is not satisfied.

The instructing means instructs the switching means to perform the partial-cylinder operation or the all-cylinder operation according to the result of the determination modified by the modifying means.

With this configuration, when the operating parameters satisfy the predetermined continuation condition within a predetermined time period from the time a vehicle operating state where the condition for performing the partial-cylinder operation is satisfied, has changed to another vehicle operating state where the condition for performing the partial-cylinder operation is not satisfied, the switching means is controlled so as to continue the partial-cylinder operation. Accordingly, when the vehicle driver operates the accelerator pedal during the partial-cylinder operation in such a manner that he returns the accelerator pedal to a previous position immediately after he depresses the acceleration pedal a little without an intention of accelerating the vehicle, the operation mode of the engine is not switched. Consequently, frequent switching shocks or deterioration of the fuel efficiency is prevented.

Claims 1 and 2 are system claims directed to a control system for an internal combustion engine having a plurality of cylinders and a switching means for switching between an all-cylinder operation in which all of the plurality of cylinders are operated and a partial-cylinder operation in which at least one of the plurality of cylinders is halted. The control system includes an operating parameter detecting means, a condition determining means, a modifying means and an instructing means.

Claim 2 depends from Claim 1 and adds the further patentable feature that the operating parameter detecting means detects an operation amount indicative of a required output power of the engine, and the condition determining means determines that the condition for performing the partial-cylinder operation is satisfied when the detected operation amount is less than a determination threshold value.

Claims 9 and 10 are method claims that parallel Claims 1 and 2. Claim 10 depends from Claim 9 and therefore, incorporates the patentable features of Claim 9.

Claims 17 and 18 are computer readable medium claims that parallel Claims 1 and 2. Claim 18 depends from Claim 17 and therefore, incorporates the patentable features of Claim 17.

The Kohno reference does not anticipate Claims 1, 2, 9, 10, 17 and 18. The Kohno reference is concerned with solving the problem of torque shocks caused at the time of switching from the all cylinder operation to the partial cylinder operation. As a solution to this problem the Kohno reference teaches a first throttle control means which changes the throttle opening degree by a predetermined amount toward the throttle opening degree for the partial cylinder operation when an engine operating state has fallen into a predetermined operating region for performing the partial cylinder operation and thereafter switches to the partial cylinder operation. The Kohno reference further teaches a second throttle control means which makes the throttle opening degree, for an initial predetermined period of time after having switched to the partial cylinder operation, to a throttle opening degree which exceeds the throttle opening for the partial cylinder operation. The predetermined period of time is arbitrarily set within a range which can improve the delay in response to the amount of intake air at an initial period after switching to partial cylinder operation.

In support of the assertion that the Kohno reference anticipates the rejected claims the Office Action cites Step 8 in Figure 3 of Kohno as disclosing the modifying means of the Claim 1 and the corresponding steps in independent Claims 9 and 17. However, a careful review of the cited Figure and the corresponding text describing Step 8 teaches an operation concerned with the amount of change in the throttle opening degree THCS. In other words, the operation of Step 8 is concerned with the first throttle control means and <u>does not</u> disclose, teach or suggest modifying a result of the determination that the partial cylinder operation may be continued when the detected operating parameters satisfy a predetermined continuation condition within a predetermined time period from the time a vehicle operating state where the condition for performing the partial cylinder operation is satisfied has changed to another vehicle operating state where the condition for performing the partial cylinder operation is not satisfied.

In summary, the Kohno reference does not disclose, teach or suggest a modifying means or the steps for modifying as recited in independent Claims 1, 9, and 17, respectively.

Accordingly, Applicants contend that the Kohno reference does not anticipate Claims 1, 2, 9, 10, 17 and 18. Applicants respectfully request the Examiner to

reconsider and withdraw the rejection of Claims 1, 2, 9, 10, 17 and 18 under 35 U.S.C. §102(b).

CONCLUSION

In view of the amendments and remarks set forth above, Applicants contend that Claims 1-5, 9-13 and 17-21 are presently pending in this application, are patentable and in condition for allowance. If the Examiner deems there are any remaining issues, we invite the Examiner to call the undersigned at (617) 227-7400.

Respectfully submitted,
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